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ABSTRACT

A series of computer programs have been developed at Michigan Technological University for use with technical writing and technical communications classes. The first type of program in the series, CURIE II, includes process-based modules, each of which corresponds to one of the following assignments: memoranda, resumes, feasibility reports, abstracts, letters of application, descriptions of mechanical processes, user documentation, systems documentation, proposals, letters of inquiry, and technical reports for lay audiences. Each of the programs begins with a review of lecture points and then guides the students through various predrafting, drafting, and post drafting strategies appropriate to that particular task. The second type of program involves rhetorical scenarios. The computer, in effect, creates several large companies complete with detailed descriptions of their products, corporate structures, profit and loss records, personnel, and communications channels. Each company has attached to it different scenarios that demand a specific piece of writing within the context of the fictitious company. The third type of program is graphics-oriented and allows students to layout brochures, reports, newspapers, press releases and other documents by manipulating symbol libraries, print blocks, type fonts, white space, pictures, and time blocks on a CRT. (Sample printouts are interspersed throughout the document.) (HOD)

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Computer Programs for Technical Communicators: The Compelling Curriculum

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Prepared for the Nationa Council of Teachers of English (Denver, November, 1983)
WORKING DRAFT

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CS 208 205

Computer Programs for Technical Communicators: The Compelling Curriculum

Even as the Chronicle of Higher Education (7 December 1983) is telling how universities—Harvard and Yale among them—are refusing students the use of computers for word processing, we who are English teachers are struggling to develop programs to encourage students to write at the computer. Our recognition of the computer as a valuable tool for the teaching of writing has been slow in coming, hampered, perhaps, by the woefully inadequate computer-assisted instruction (CAI) available to us up to this point. We are finding ourselves in the position of having to convince administrations that writing and computers is a happy union and not just a marriage of student convenience. We are having to argue that computers can offer significant assistance to the writing process, that they are not simply electronic typewriters, providing services auxillary to the business of the university.

We are partly responsible for the fact that using computers for word processing and work with language is considered less serious than crunching numbers. There just weren't enough of us present when computers began to appear on the university scene. Of course, we can't blame anyone else. English teachers have a nasty habit of napping through revolutions. After all, we yawned when they invented the transistor, nodded off over the integrated circuit and slept soundly through the ensuing explosion of hardware and software that made computers valuable learning tools in most fields. Cindy didn't wake up, in fact, until 1980 when a friend of hers, Hugh Burns, got her excited about the potential for using computers to teach invention strategies to young writers, and she began writing computer-assisted instruction to guide students through the composing process. Billie's awakening was earlier, but, perhaps, a bit less pure. She came to be

interested in computer programs when in one week she heard that a colleague had sold a program he had written for $40,000 and that someone in Canada had developed a word processing program that automatically kept track of footnotes.

Now we know there are quite a few English teachers out there who are still napping, people who have not awakened to the potential of computers in writing-intensive classrooms. We know this because we see the kind of CAI programs that are selling in our journals and at our conventions. The great preponderance of these software packages involve simplistic exercises in grammar, spelling, and mechanics, topics easily adapted to binary logic, and such software does little to tax the hardware currently at our disposal. Fortunately, we also see quite a few people who are wide awake: Bill Wresch, Helen Schwartz, Valarie Arms, and Ruth Von Blum are creating programs that stretch the capabilities of hardware and the imagination of computer programmers. The programs these people are writing help students learn about the processes involved in composing. Equally encouraging are the signs that serious evaluation of CAI used in the English classroom is going ahead, as in the work of Dawn Rodrigues and Ray Rodrigues at New Mexico State. But, as a profession, we're still a long way from waking up to the fact that CAI can be useful in areas that require specific kinds of writing skills and strategies. And that brings us to what we're supposed to be addressing—software for those hardnosed instructors teaching classes in technical writing and technical communications.

Before we show you some examples of the kinds of programs we're developing for technical communications classes, however, we want to touch on what we think a good writing program must do if it is offer real help for teachers of writing. And while we hope most of these ideas will seem obvious

to you, they apparently aren't so obvious to those folks who keep creating the limited CAI programs software vendors try to sell us in the last several years.

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Place Figure 1 about here.

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First, in our opinion, CAI designed for writing classes has to make students write. We know that we learn to write only as we practice writing. Good CAI for all writing courses, whether technical communications or compostion, should require students to write large chunks of discourse right on the cathode ray tube. Students should not simply press key A, B, or C, as needed but actually compose sentences and paragraphs, prewrite, revise, recast, draft, and learn by writing. Second, any CAI used in a writing-intensive classroom should be process-oriented; that is, either it should guide students through a process of planning, organizing, drafting, redrafting, revising, and editing, or, if it is designed to deal with only one part of the writing process, it should tell students how its approach is limited and suggest how its contents fit into the larger process of composing. Finally, CAI designed for writing classes should be rhetorically specific. When, for example, a program asks students to write or to engage in the process of composing, it should give them a rhetorical context in which to make composing decisions: the decisions writers need to make about audience, purpose, arrangement, development, and style.

Now, with these three major criteria in mind, we'd like to tell you about a series of programs that we are designing at Michigan Tech for technical writing and technical communications classes. We call the programs CURIE II, and right now, although they are still in the development stage, because we're

Figure 1:

CAI FOR COMPOSITION PROGRAMS

PROVIDES WRITING PRACTICE

EMPHASIZES PROCESS

IDENTIFIES RHETORICAL CONTEXTS

busy completing our CAI programs for composition courses, WORDS WORK, we have expended quite a bit of time and energy inplanning them.

What we hope to do with the CURIE II series is push at the parameters of CAI, putting, as fully as possible, the computer's abilities in the service of writing teachers. In other words, we are as much interested in expanding our knowledge of the role the computer can play in English pedagogy as we are in making sound educational materials. When completed, the CURIE II series will consist of 3 basic types of programs: process-based programs, rhetorical-scenario programs, and graphics programs.

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Place Figure 2 about here.

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We'd like to consider briefly each of these types of programs because they illustrate some of the creative ways in which computers can be used to teach students about written communications in specific classroom settings. Currently, we see very little being done with CAI in technical communications classes, and we hope CURIE II will start people thinking about the possibilities of such programs. While we describe the programs we are developing, it's important to keep in mind those three criteria for CAI that we identified because we believe the CURIE II series adheres closely to those criteria; that is, CURIE II consists of process-based programs that encourage students to practice composing in rhetorically specific situations.

We'll start talking about CURIE II by describing the first type of programs in the series, the process-based modules. Each of these modules corresponds to one of the traditional assignments given in technical writing and communications classes:

Figure 2:

CURIE II

PROCESS-BASED MODULES

RHETORICAL SCENARIOS

LAYOUT SIMULATIONS

Memoranda

Resumes

Feasibility reports

Abstracts

Letters of application

Descriptions of mechanical processes

User documentation

Systems documentation

Proposals

Letters of inquiry

Technical reports for lay audiences

For each of these assignments, we have planned a separate, process-based program that students can access outside of normal class hours. Let's say, for example, that a student is given a memo writing assignment in her technical communications courses. When CURIE II is completed this student can drop into our Language Skills Lab at her own convenience and pop the Memo Writing program into the computer.

Each of these process-based programs will begin with a review of lecture points and then will guide the students through various predrafting, drafting, and post drafting strategies appropriate to that particular task.

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Place Figure 3 about here.

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Now, let's see how this will work for the memo writing assignment. The module begins with a review of lecture points. In this case, the review would cover format, purpose, brevity, clarity, and layout in writing memos.

Figure 3:

PROCESS-BASED MODULES

MEMORANDA

RESUMES

LETTERS OF APPLICATION

LETTERS OF INQUIRY

ABSTRACTS

DESCRIPTIONS OF MECHANICAL PROCESSES

USER DOCUMENTATION

SYSTEMS DOCUMENTATION

FEASIBILITY REPORTS

PROPOSALS

TECHNICAL REPORTS FOR LAY AUDIENCES

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Place Figure 4 about here.

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This is an example of the brief review of the lecture point on brevity. As you can see, the program first refreshes the student's memory about the importance of brevity in writing memoranda. After this explanation, the computer asks the student, Portia in our example, whether she needs practice. If she says yes, it gives her a very wordy memo to revise.

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Place Figure 5 about here.

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Let's imagine that Portia has revised the practice memo. The program is designed to respond to the revision, and by counting the number of words in the original text and comparing it to the number of words in the revised text as well as by searching to make sure the important ideas were contained in the student's revised copy, the computer can offer some evaluation. When CURIE II is completed, the program will also offer three levels of explanation and practice on a given point. In this way, all the process-based programs in CURIE II are individualized to provide each student the exact amount of practice he or she needs.

After our student finishes reviewing each of the major lecture points, the process-based program will guide her through a number of planning strategies for a memo. It will ask her to identify the purpose of the memo she has to write, and analyze the audiences that will read the text. The program will also ask students to list the key points in the memo they are writing, to arrange or organize these points effectively, and to identify the action that they want recommended in the memo.

Figure 4:

MEMORANDA

REVIEWING LECTURE POINTS:

- FORMAT
- PURPOSE
- BREVITY
- CLARITY
- LAYOUT

BEFORE DRAFTING A MEMO:

- ANALYZING PURPOSE
- ANALYZING AUDIENCE
- ANALYZING INFORMATION
- ORGANIZING INFORMATION
- RECOMMENDING ACTION

DRAFTING A MEMO

AFTER DRAFTING A MEMO:

- REVISING FOR BREVITY
- REVISING FOR CLARITY
- REVISING FOR SENTENCE LENGTH AND READABILITY
- CHECKING FORMAT
- CHECKING LAYOUT

Figure 5:

BREVITY

WELL, PORTIA, I'M SURE YOUR TEACHER TOLD YOU TO PRESENT THE MATERIAL IN YOUR MEMO AS CONCISELY AS POSSIBLE. OFTEN, MEMOS GET ONLY A BRIEF GLANCE BY THE READER, AND, IF THE IMPORTANT MATERIAL IS BURIED IN WORDY PASSAGES, YOUR READER MAY MISS THE POINT ENTIRELY OR FAIL TO TAKE THE ACTION YOU'VE RECOMMENDED.

WOULD YOU LIKE SOME PRACTICE IN MAKING MEMOS MORE CONCISE?

[YES]

OKAY, PORTIA, PRETEND JUST FOR A MINUTE THAT YOU'RE A JUNIOR EXECUTIVE WORKING FOR COSMIC CHARGE, A MANUFACTURER OF VIDEO GAMES. THE FOLLOWING MEMO HAS BEEN SENT TO YOU BY YOUR BOSS, AND SHE ASKED YOU TO PASS IT ALONG TO THE DESIGN DEPARTMENT WHERE THE VIDEO GAMES ARE CREATED. BECAUSE HER MEMO IS UNNECESSARILY WORDY, AND CONTAINS MATERIAL AND INFORMATION THAT THE DESIGN PROGRAMMERS DON'T NEED TO WORRY ABOUT, YOU NEED TO REWRITE IT BEFORE YOU SEND IT ON. REMEMBER, THESE FOLKS ARE BUSY! IT IS NOVEMBER, THE MONTH BEFORE ALL THE NEW CHRISTMAS GAMES ARE TO COME OUT, AND THEY'VE BEEN WORKING OVERTIME. MAKE YOUR MEMO SHORT AND TO THE POINT.

Figure 5 (con't):

MEMO TO BE REVISED

TO: PORTIA WHITTENBAUM
FROM: SLARIA BROWN
DATE: 11/2/83
COPIES TO:

AT OUR MONDAY BRAINSTORMING SESSION, WE CAME TO THE CONCLUSION THAT OUR GAMES WERE SEXIST IN NATURE AND THAT THIS LIMITED THE MARKETING POTENTIAL OF THESE GAMES. OUR FIELD REPRESENTATIVES WHO ATTENDED THIS MEETING MENTIONED THE FACT THAT ALL THE BATTLE STAR COMMANDERS, SHUTTLE PILOTS, TANK COMMANDERS, BASEBALL PLAYERS AND ADVENTURERS FEATURED AS CHARACTERS IN OUR VIDEO GAMES APPEAR TO BE MALES AND THAT THE LITTLE GIRLS AND WOMEN WHO PLAY THESE GAMES ARE GETTING MIFFED AT OUR CHAUVINIST ATTITUDES. AS YOU ALSO PARTICIPATED IN THIS SESSION, I'D LIKE TO PUT YOU IN CHARGE OF SEEING THAT THE DESIGN PEOPLE UNDERSTAND THE NEED TO INTRODUCE SOME FEMALE CHARACTERS INTO OUR GAMES.

Here is an excerpt from the planning portion of the memo program in which the student is asked to identify and analyze the audience for the memo she is to write.

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Place Figure 6 about here.

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The program first asks Portia to list the names and titles of individuals she knows will read her memo, and then it asks her questions about each of these individuals, plugging in the information she has just given.

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Place Figure 7 about here.

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When Portia finishes the planning activities associated with the assignment, the program will ask her to type in an actual draft of her memo. Then, CURIE II's process-based programs will guide Portia through a number of revision activities. In the memo assignment, for example, the program will provide Portia a series of questions or exercises that will help her revise her memo for brevity, clarity, readability, format, and layout.

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Place Figure 8 about here.

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Here is an excerpt from the memo program dealing with one small aspect of readability. Notice again that the process-based programs of CURIE II strongly urge Portia to do multiple drafts of her memo, all the while suggesting to her effective heuristics for recasting and revision.

The second type of program we're working with in CURIE II involves rhetorical scenarios. We've conceived of a bank of rhetorical situations for

Figure 6:

ANALYZING AUDIENCE

PORTIA, AS YOU WELL KNOW, THE SUCCESS OF ANY MEMO YOU WRITE IS DEPENDENT, TO A GREAT EXTENT, ON YOUR ABILITY TO ANALYZE THE AUDIENCE WHO WILL RECEIVE IT. IF YOU HOPE TO BE A SUCCESSFUL WRITER, YOU MUST MODIFY THE INFORMATION YOU PRESENT, THE RECOMMENDATIONS YOU MAKE, AND THE LANGUAGE YOU USE ACCORDING TO THE AUDIENCE YOU ANTICIPATE READING YOUR WORK.

I'D LIKE TO HELP YOU IDENTIFY THE AUDIENCE FOR YOUR CURRENT MEMO ASSIGNMENT, PORTIA. FIRST, LIST BELOW ALL THE NAMES AND TITLES OF THE PEOPLE WHO WILL READ YOUR MEMO:

NAME: JANELLE AVERY TITLE: DORM SUPERVISOR
NAME: JAMES KIBERY TITLE: DORM COUNSELOR
NAME: KATE CHOCKO TITLE: DEAN OF STUDENTS

RIGHT, PORTIA, NOW I'LL PROVIDE YOU WITH SOME QUESTIONS TO EXERCISE YOUR SENSE OF AUDIENCE FOR EACH READER. WRITE ONE OR TWO SENTENCES OF EXPLANATION OR DESCRIPTION IN RESPONSE TO EACH QUESTION I ASK.

Figure 7:

1. WHAT DOES JANELLE AVERY HAVE TO KNOW ABOUT OVERCROWDING IN THE DORMS? REMEMBER SHE IS A DORM SUPERVISOR, AND SHE HAS LIMITED TIME FOR READING MEMOS.
2. WHAT INFORMATION IS ESSENTIAL FOR HER TO KNOW IN ORDER TO TAKE THE ACTION YOU RECOMMEND?
3. WHAT ACTION DO YOU WANT JANELLE AVERY TO TAKE WITH REGARD TO THE PROBLEM OF OVERCROWDING IN DORMS?

Figure 8:

SENTENCE LENGTH AND READABILITY

PORTIA, I CAN GIVE YOU ONE GOOD STYLISTIC HINT ABOUT WRITING MEMOS. PROFESSIONAL TECHNICAL WRITERS HAVE FOUND THAT KEEPING THEIR SENTENCE LENGTH UNDER 20 WORDS HELPS TO INCREASE THE READABILITY OF THEIR TEXTS. OF COURSE, WORD LENGTH AND SUBJECT MATTER ALSO AFFECT READABILITY, BUT FOR NOW, LET'S JUST LOOK AT THE LENGTH OF THE SENTENCES IN YOUR MEMO. LET ME SCAN IT QUICKLY FOR YOU, AND THEN I'LL TELL YOU WHAT I THINK.

I SEE THAT YOU AVERAGE 26 WORDS PER SENTENCE, PORTIA. THIS LENGTH WOULD MAKE READING DIFFICULT FOR MANY READERS. I'LL FLASH EACH SENTENCE OVER 20 WORDS IN LENGTH UP ON THE SCREEN, AND YOU REVISE AND SHORTEN IT.

teachers to draw upon when they are giving assignments in technical communications classes. On the computer we will, in effect, create several large companies. There will be detailed descriptions of their products, corporate structures, profit and loss records, personnel, and communications channels. CURIE II will reproduce the annual reports of these companies, the resumes of key personnel, advertisements and simulations featuring the company's products, and key pieces of communication both inter-corporation memos, and letters that go outside the company.

This information can be used by the teacher in a variety of ways. Each company will have attached to it twenty different rhetorical scenarios, each of which demands a specific piece of writing within the context of the ficticious company. And, while not infinite, the number of possible assignments in such an arrangement is both large and varied. One assignment might ask the student to assume the persona of a marketing vice-president who must write a formal proposal for initiating production of a new product. The computer stores all the information the student needs to complete this assignment--descriptions of the product, anticipated marketing schedules, etc.

For an example of how this might work, let's look at another scenario.

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Place Figure 9 about here.

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In this one, Portia is asked to assume the persona of A.E. Hunicutt, the personnel manager who wants to hire a crack young programmer. The program instructs Portia that she is to write a memo to a specified audience within her micro-computer company--Electronic Tonic. The program not only provides purpose and audience for the memo, but also other important rhetorical information.

Figure 9:

SCENARIO #56

IT'S FRIDAY, OCTOBER 10, 4:00 P.M., AND YOU'RE READY TO GO HOME AS SOON AS YOU'VE FINISHED ONE MORE PIECE OF BUSINESS. YOU ARE A. E. HUNICUTT, DIRECTOR OF PERSONNEL, AND YOU'RE EMPLOYED BY ELECTRONIC TONIC, A NEW MICROCOMPUTER COMPANY THAT HAS SPRUNG UP IN THE WAKE OF SILICON CHIP MINIATURIZATION.

AS PERSONNEL DIRECTOR, YOU HAVE JUST INTERVIEWED A CRACK YOUNG PROGRAMMER, SELENE CAPOTE, WHO JUST GRADUATED FROM MIT AND WHO HAS HAD EXPERIENCE IN DESIGNING WORD-PROCESSING PROGRAMS. YOU KNOW THAT DAVID LIEBL, MANAGER OF THE COMPANY'S SOFTWARE DIVISION, WANTS TO DEVELOP AND MARKET A NEW WORD PROCESSING SYSTEM FOR THE COMPANY'S BUSINESS MICRO. YOU ALSO KNOW HE NEEDS ADDITIONAL, QUALIFIED PERSONNEL TO UNDERTAKE SUCH A PROJECT. TO GET ADMINISTRATIVE APPROVAL FOR HIRING SELENE CAPOTE, YOU HAVE TO JUSTIFY THE CASE TO JANET DANIELLSON, THE VICE PRESIDENT IN CHARGE OF PRODUCT DEVELOPMENT, IN A MEMO.

BELOW YOU WILL FIND SOME SOURCES OF INFORMATION THAT WILL HELP YOU WRITE THIS MEMO. PLACE THE CURSOR NEXT TO THE DATA YOU WOULD LIKE TO SEE FIRST.

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Place Figure 10 about here.

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It offers Portia a look at the personnel records of key people involved in the situation allowing her to appeal more directly to them, copies of past company correspondence detailing the need for more personnel in the Design Department, and a copy of a growth statement by the President of Electronic Tonic that will give her a rationale for her new programmer.

We plan to use these realistic scenarios as a context for teaching report or memo writing in our technical communications classes. These senarios fit together with the other process-based modules in CURIE II. If, for example, Portia was assigned the rhetorical scenario mentioned above in her technical communications class, she could go to the Writing Lab and access the process-based program for memo writing. The program would guide her through the process of planning, drafting, and revising of the memo as it is detailed in the rhetorical scenario using the persona and the situation she had been assigned.

Finally, we plan a third type of program for CURIE II, one that will help us teach document design. These graphics-oriented programs will allow students to layout brochures, reports, newspapers, press releases and other documents by manipulating symbol libraries, print blocks, type fonts, white space, pictures, and tint blocks on a CRT. These programs will work also in concert with both the process-oriented and rhetorical senario modules; therefore, documents students write using the other two programs can then be displayed in a number of alternative formats. Students will be able to choose that design which works best given a specific rhetorical situation. These graphics programs will make design virtually instantaneous because the

Figure 10:

MENU

PERSONNEL FOLDER FOR A. E. HUNICUTT

PERSONNEL FOLDER FOR SELENE CAPOTE

PERSONNEL FOLDER FOR DAVID LIEBL

PERSONNEL FOLDER FOR JANET DANIELSON

PROFIT/LOSS STATEMENT OF SOFTWARE DIVISION

MEMO REQUESTING ADDITIONAL PERSONNEL FROM MANAGER OF SOFTWARE DIVISION

COMPANY'S GROWTH STATEMENT BY PRESIDENT OF ELECTRONIC TONIC

students can try out a variety of formats by using different type fonts, headline designs, color patterns and evaluating their effectiveness on different audiences.

Well, these are our plans for Curie II. We hope that you can get a sense from our outline of the kinds of things computer-assisted writing instruction can accomplish in the technical communications classroom. Our big hope is that more programs like CURIE II will be developed soon by other technical communications teachers who are waking up at last to the potential of the computer revolution.